UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/573,992	03/30/2006	Akira Ishibashi	1033413-000008	1804

21839 7590 03/18/2010

BUCHANAN, INGERSOLL & ROONEY PC
POST OFFICE BOX 1404
ALEXANDRIA, VA 22313-1404

EXAMINER	
DUONG, THO V	

ART UNIT	PAPER NUMBER
3744	

NOTIFICATION DATE	DELIVERY MODE
03/18/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com
offserv@bipc.com

Office Action Summary	Application No.	Applicant(s)	
	10/573,992	ISHIBASHI ET AL.	
	Examiner	Art Unit	
	Tho v. Duong	3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/30/06; 8/4/06; 1/23/07 and 9/26/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of species C of figure 12 in the reply filed on 12/24/09 is acknowledged. The traversal is on the ground(s) that there is no serious burden on searching the non-elected species, specifically claims 3 and 11. This is found persuasive. Therefore, the previous restriction/election requirement has been withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Futagami (JP 2002213764) in view of Itagaki (JP 10038302). Futagami discloses (figure 1) an indoor unit of an air conditioner comprising an upper air inlet; a plurality of fin tube type heat exchangers (8) each having heat transfer tubes extending through stacked plate fins; a fan (10); an air passage; and an air outlet (7); wherein the plurality of fin tube type heat exchangers include an adjacent heat exchanger disposed adjacent to the air inlet and a remote heat exchanger disposed farther from the upper air inlet than the adjacent heat exchanger, the adjacent and remote heat exchangers surround the fan, an auxiliary heat exchanger (12) is provided on an upstream side of the remote heat exchanger, and a space is provided in a front panel of the auxiliary heat exchanger to pass air through; the adjacent heat exchanger consists of an upper front heat

exchanger provided in an upper front area bellow the upper air inlet and slightly tiled so as to make its upper portion backward and its lower portion positioned forward, and a rear heat exchanger (8b) provided in an upper area bellow the upper air inlet and slightly tilted so as to make its upper portion positioned forward and its lower portion backward, and the upper front and rear heat exchanger have the same shape. Futagami does not disclose that the fins have louvered portions and an end face of one of the front heat exchanger is in face contact with a side face of the other heat exchanger. Itagaki discloses (figures 1-2) an indoor air conditioner that has fins with louvers portion for a purpose of improving the heat exchanger performance of the air conditioner and an end face of an upper heat exchanger (82,83) is in face contact with a side face of the other heat exchanger (82,83) of the heat exchanger adjacent the upper inlet of the air conditioner (figure 1) for a purpose of eliminating any intermediate joining portion between the two heat exchangers so a more compact air conditioner can be formed. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Itagaki's teaching in Futagami's device for a purpose of improving the heat exchanger performance of the air conditioner and eliminating any intermediate joining portion between the two heat exchangers so a more compact air conditioner can be formed.

Claims 1-3,5,10,11 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Kusuhara Hisao (JP 1123179). Kusuhara Hisao discloses (figures 1,6,9 and 11)) an indoor unit of an air conditioner comprising an upper air inlet (105); a plurality of fin tube type heat exchangers each having heat transfer tubes extending through stacked plate fins; a fan (101); an air passage; and an air outlet (104); wherein the plurality of fin tube type heat exchangers include an adjacent heat exchanger disposed adjacent to the air inlet and a remote heat exchanger

disposed farther from the upper air inlet than the adjacent heat exchanger, the adjacent and remote heat exchangers surround the fan; a space is provided in a front panel of the auxiliary heat exchanger to pass air through; the adjacent heat exchanger consists of an upper front heat exchanger provided in an upper front area bellow the upper air inlet and slightly tiled so as to make its upper portion backward and its lower portion positioned forward, and a rear heat exchanger provided in an upper area bellow the upper air inlet and slightly tilted so as to make its upper portion positioned forward and its lower portion backward, and the upper front and rear heat exchanger have substantially the same shape and are connected so that an end face of one of the upper front and rear heat exchangers is in face contact with a side face of the other heat exchanger near the upper inlet; the air pressure loss of an adjacent heat exchanger disposed adjacent the upper air inlet is larger than the air pressure loss of a remote heat exchanger (lower heat exchanger 112); the heat exchangers have louvers (109,110) and louvers (110) positioned on the most downstream side in a row direction are shaped like a parallelogram having opposite sides inclined downward at a predetermined angle to the row direction; and in the other embodiment, the lower heat exchanger (112) does not louvers to lower pressure loss.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kusuhara Hisao in view of Futagami (JP 2002213764). Kusuhara substantially discloses all of applicant's

claimed invention as discussed above except for the limitation of an auxiliary heat exchanger provided on an air upstream side of the remote heat exchanger. Futagami discloses (figure 1) an indoor air heat exchanger that has an auxiliary heat exchanger provided on an air upstream side of the remote heat exchanger for a purpose of enhancing the heat exchange performance for the air conditioner. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Futagami's teaching in Kusuhara's device for a purpose of enhancing the heat exchange performance of the air conditioner.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kusuhara in view of Kitazawa et al. (JP 2003028594A). Kusuhara substantially disclose all of applicant's claimed invention as discussed above except for the limitation that the lower pressure can be resulted from a larger pitch. Kitazawa discloses (figure 1) a heat exchanger that has pitch of lower fins (2b) is larger than the pitch of upper fins (2a) for a purpose of lowering the pressure loss of the lower fin and delaying any icing accreting from the bottom fin. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Kitazawa's teaching in Kusuhara's device for a purpose of lowering the pressure loss of the lower fin and delaying any icing accreting from the bottom fin.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kusuhara in view of Mukoda et al. (JP 411281280A). Kusuhara substantially discloses all of applicant's claimed invention as discussed above except for the limitation that the height of the louver of the remote heat exchanger is lower than the louver of the adjacent heat exchanger. The prior arts of Kusuhara (figure 9) or Kitazawa (as rejected in claim 6) discloses to have a lower pressure loss in the remote heat exchanger than the adjacent heat exchanger achieved by having larger air flow

passage (higher fin pitch) or less flow obstacle in the flow path (flat fin in compare with louvered fin) in the remote heat exchanger than the adjacent heat exchanger. Mukoda et al discloses that the height of the louvers can also vary the pressure loss or flow resistance of the air flow. In the instant case, Mukoda teaches that one louver is shorter the other louvers for a purpose of lower the flow resistance or the pressure loss of the airflow while maintaining a high heat transfer surface area of the fin due to the presence of the louvers on fins. It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ Mukoda's teaching of different louver height in Kusuhara's device for a purpose of lowering the pressure of loss or flow resistance of the remote heat exchanger while maintaining a high heat transfer surface area of the fin.

Claims 4 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kusuhara in view of Ogawa et al. (JP 404020792A). Kusuhara substantially discloses all of applicant's claimed invention as discussed above except for the limitation that at the lowermost end portion, a louvered portion is provided only on the most down stream side in a row direction. Ogawa discloses (figures 6-7) a heat exchanger that has fins equipped with louvers portion (8) only on the most downstream side in a row direction for a purpose of reducing clogging of a frost layer at the front edge of the fin. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Ogawa's teaching in Kusuhara's device for a purpose of reducing clogging of a frost layer at the front edge of the fin.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Suga et al. (JP 403211396A) discloses an air conditioner.

June (US 5,937,668) discloses heat exchanger fin for an air conditioner.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tho v. Duong whose telephone number is 571-272-4793. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tyler J. Cheryl can be reached on 571-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tho v Duong/
Primary Examiner, Art Unit 3744

.